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August 2, 1995

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William F. Caton
Acting Secretary
Federal Communications Commission
1919 M Street, N.W., Room 222
Washington, D.C. 20554

Re: Ex Parte Presentation -- CC Docket No. 93-22

Dear Mr. Caton:

On Wednesday, August 2, 1995, representatives of GE Information Services made an ex parte presentation to Mary Romano and Kurt Schroeder of the Common Carrier Bureau regarding the proposed modification of the definition of "presubscription or comparable arrangement" in Section 64.1501(b) of the Commission's rules. Representing GE Information Services were Warner Sinback and the undersigned of this Firm. The views expressed on behalf of GE Information Services are reflected in the attached materials, copies of which were provided to Ms. Romano and Mr. Schroeder.

Please let us know if you have any questions.

Sincerely,

Joseph P. Markoski

/jef
Enclosures

cc: Mary Romano (w/o encl.)
Kurt Schroeder (w/o encl.)

EX PARTE PRESENTATION -- POLICIES AND RULES IMPLEMENTING THE TELEPHONE DISCLOSURE AND DISPUTE RESOLUTION ACT, CC DOCKET NO. 93-22

I. LEGITIMATE INFORMATION SERVICE PROVIDERS HAVE TRADITIONALLY ESTABLISHED BUSINESS RELATIONSHIPS WITH CUSTOMERS THROUGH WRITTEN CONTRACTS OR THE USE OF GENERAL PURPOSE CREDIT CARDS.

- High-volume customers generally obtain information services pursuant to written contracts that are the product of face-to-face discussions with individual sales representatives.

- Home enthusiasts and small businesses generally subscribe to information services either through the mails, using preprinted order forms, or while on-line, using general purpose credit cards.

II. THE GROWING AWARENESS AND USE OF INFORMATION SERVICES HAVE CREATED ADDITIONAL OPPORTUNITIES TO MARKET SERVICES TO, AND ENTER SUBSCRIPTION AGREEMENTS WITH, NEW CUSTOMERS ON AN ON-LINE BASIS.

- Information service providers advertise their services in printed media, as well as in cyberspace. These advertisements invite potential customers to contact information service providers -- free of charge through an 800 Service number -- to obtain further information about their services and subscribe.

- Computer-literate customers, using their PCs or computer systems, are responding to these advertisements in increasing numbers.

- These customers are interested in subscribing and obtaining immediate access to the information services about which they call.

- Many of these new customers are small-to-medium-sized businesses that require monthly invoices from their vendors.

- The use of 800 Service by these customers in contacting information service providers implicates the provisions of Section 228(c)(7) of the Communications Act.

III. IF THE COMMISSION DETERMINES THAT "WRITTEN" PRESUBSCRIPTION OR COMPARABLE ARRANGEMENTS ARE NECESSARY TO PROTECT CONSUMERS, IT SHOULD PERMIT THE USE OF AGREEMENTS THAT ARE ELECTRONICALLY TRANSMITTED AND EXECUTED.

- Electronic commerce -- i.e., freeing business from its dependence on paper and the physical handling and transmission of documents -- is at the heart of the Information Age and a prototypical use of the National Information Infrastructure.

- The use of on-line agreements will provide subscribers with immediate access to the information services they want and need. Requiring the use of agreements that are recorded on paper and sent through the mails will needlessly frustrate the efficient marketing of information services and delay their availability to consumers.

- The legitimacy of on-line agreements and their value in protecting consumers have been recognized by the amendments to Section 228(c) of the Communications Act proposed by S.652, the "Telecommunications Competition and Deregulation Act of 1995."

- Customers can print the subscription agreements appearing on their computer screens and retain them for their protection.

- Any risk of loss presented by the use of on-line agreements lies with information service providers that offer service to subscribers pursuant to these agreements. If these agreements are unenforceable, information service providers may have difficulty collecting for their services; if these contracts are enforceable, subscribers are protected by their terms.

- The use of on-line agreements does not materially increase the likelihood that presubscription or comparable arrangements will be executed by individuals who are not legally competent. To the extent that the use of on-line agreements does enhance that possibility, information service providers -- and not consumers -- are at risk.

- In short, the use of on-line agreements is totally consistent with the Telephone Disclosure and Dispute Resolution Act and the Commission's goals in this proceeding.

- Therefore, if Section 64.1501(b) is to be amended, the rule should expressly permit the use of on-line agreements.

Legal Responses to Commercial Transactions Employing Novel Communications Media

John Robinson Thomas

It is becoming more and more important that the rules governing negotiations made by telegraph should be clearly defined and settled, as contracts thus made are constantly increasing in number and magnitude.

— Scott & Jarnagin,
A Treatise Upon the Law of Telegraphs, 1868.[1]

Electronic messaging systems and electronic data interchange are changing the way businesses negotiate and enter into contracts. These changes require a reexamination of fundamental contract principles.

— American Bar Association,
Report on Electronic Messaging, 1988.[2]

More than a century ago, the telegraph[3] revolutionized communications. For the first time, telegraphed messages spanned distances of thousands of miles, eliminating barriers of time and space.[4] The telegraph encouraged settlement of the West and the growth of cultural nationalism, and resulted in the development of the first significant industrial monopoly.[5] This device also significantly affected commerce. Americans formed countless contracts using the telegraph, which quickly became an everyday tool of business.[6] Commercial users also rapidly adopted a later communications technology, tele-

1. WILLIAM L. SCOTT & MILTON P. JARNAGIN, A TREATISE UPON THE LAW OF TELEGRAPHS § 296 (1868).

2. AMERICAN BAR ASSN., ELECTRONIC MESSAGING, A REPORT OF THE AD HOC SUBCOMMITTEE ON SCOPE OF THE U.C.C. 5 (1988) (Electronic Messaging Services Task Force) [hereinafter ELECTRONIC MESSAGING].

3. A telegraph employs electrical impulses which are transmitted and received as encoded signals. *See generally* Smith v. Downing, 22 F. Cas. 511 (C.C.D. Mass. 1850) (No. 13,036). Early telegraph systems were simple electrical circuits: when an operator closed a switch at the sending station, current flowed to the recipient's sounder and caused it to click. Telegraph companies have since constructed more complex multiplexing and nationwide switching systems. To send a telegram, a user delivers a message to the office of the telegraph company. The company routes the message through telegraph lines to an office near the recipient, delivering it by hand or through the United States Postal Service. The delivered message is termed a "mailgram." *See* Herbert D. Benington, *Electronic Mail, in* INNOVATIONS IN TELECOMMUNICATIONS, 887, 903-05 (Jamal T. Manassah ed., 1982).

4. *See, e.g.*, ROBERT L. THOMPSON, WIRING A CONTINENT THE HISTORY OF THE TELEGRAPH INDUSTRY IN THE UNITED STATES (1947)

5. *Id.* at viii.

6. *See, e.g.*, Tyler, Ullman & Co. v. Western Union Tel. Co., 60 Ill. 421, 440 (1871).

type systems.[7] Legal uncertainties hampered these early communications, however, because the new technologies challenged long established rules of contract law and evidence. Eventually, business users and courts developed practices and legal standards accommodating use of the new technologies.

A similar revolution in communications technology is occurring today. Telefacsimile (fax) machines[8] and electronic mail networks[9] have become commonplace features of our "Information Society."[10] Business users transmit information through these systems as readily

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7. Such systems are also known as telex or TWX machines. A teletype user purchases an electrical line, terminal, and teleprinter for individual use and subscribes to a communications service. Subscribers then initiate communications in a fashion similar to dialing a number on an ordinary telephone. The two terminals exchange unique identifiers, or "answerbacks," to verify the parties' identities. *See* BENJAMIN WRIGHT, THE LAW OF ELECTRONIC COMMERCE § 1.1.3 (1991). The sender then types a message on the teletypewriter, which converts the entered letters into a digital character code. The message is immediately transmitted, decoded and printed by the recipient's teleprinter. *Id.*

8. Telefacsimile machines are also known as telecopiers or telefax machines. Bradford W. Hildebrandt, *The Use of Facsimile by Law Firms*, N.Y. L.J., Mar. 11, 1986, at 4. Modern telefacsimile technology allows the transmission of a fixed image as an electrical signal over telephone lines. *See* Secure Serv. Tech. v. Time & Space Processing, Inc., 722 F. Supp. 1354, 1355 (E.D. Va. 1989); David A. Sokasits, Note, *The Long Arm of the Fax: Service of Process Using Fax Machines*, 16 RUTGERS COMPUTER & TECH. L.J. 531 (1990). Users plug a telefacsimile machine, commonly known as a fax machine, into an ordinary telephone jack. The sender places documents into the telefacsimile machine, which converts the shades of black and white on the paper into digital signals. *See, e.g.*, MICHAEL BANKS, UNDERSTANDING FAX AND ELECTRONIC MAIL 34-40 (1990). To transmit these signals, the sender dials the telephone number of the recipient's telefacsimile machine. The two telefacsimile machines communicate through various protocols, such as Consultative Committee for International Telephone and Telegraph (CCITT) G3. *See id.* at 13-14. The receiving unit turns the signal back into a black-and-white document, usually through the oxidation of chemically treated, thermally activated paper by heated wires. *See id.* at 49-53. Recently introduced telefacsimile machines employ laser technology to print on ordinary paper. *Id.* at 52-53.

9. Electronic mail systems provide the ability to receive on a computer terminal a message originating on another terminal. *See The Commercial Use of Electronic Data Interchange — A Report and Model Trading Partner Agreement*, 45 BUS. LAW. 1645, 1649 (1990) (Electronic Messaging Services Task Force of the American Bar Association) [hereinafter *Report and Model Trading Agreement*]; ELECTRONIC MESSAGING, *supra* note 2, at 27. The terminals may be adjacent or thousands of miles apart. In a typical communication, a user types a message into a computer and routes it through a communications network to the "mailbox" of the recipient. *See* BANKS, *supra* note 8, at 119-44. The "mailbox" is a storage area for digitally encoded information; the message remains there until the recipient checks the mailbox and reads his messages. Either party may store the message electronically, on magnetic media, or print the message onto paper.

This Note does not distinguish between electronic mail and "electronic data interchange" (EDI). Although both media transmit messages between computers in the same fashion, electronic mail messages consist of ordinary text for individual users to read. In contrast, EDI messages are composed of computer-readable data that accounting and inventory systems can manipulate without human intervention. *See* ALVIN TOFFLER, POWERSHIFT 120-21 (1990). For sources that consider the differences between electronic mail and EDI, see WRIGHT, *supra* note 7; *Report and Model Trading Agreement*, *supra* note 9.

10. *See, e.g.*, Debra J. Mayberry, *Introductory Note* to FACSIMILE USERS' DIRECTORY at v (Debra J. Mayberry ed., 1990); CARL TOWNSEND, ELECTRONIC MAIL AND BEYOND 11 (1984). *See generally* YONEJI MASUDA, THE INFORMATION SOCIETY AS POST-INDUSTRIAL SOCIETY (1981).

and quickly as by telephone, circumventing the delays and expense of delivery services.[11] This capability allows parties to negotiate and enter into complex written agreements with all the efficiency that our fast-paced and global business environment demands.[12] These devices also expedite more mundane commercial relationships, such as invoice and purchase order submission. In this context, telefacsimile or electronic mail use reduces transmission delays, inventory costs, and the amount of paper produced in the transaction.[13]

Not surprisingly, legal rules have failed to maintain the pace of this rapid change in technology. Few courts have considered the use of these technologies in a commercial setting. As happened in the early days of telegraphy, the resulting legal uncertainty hinders development of the new media and encourages inefficient business practices. Wary business users, unsure of how the law of evidence and contracts will govern electronically recorded transactions, often exchange copies of such communications by messenger or mail.[14] This resort to older, slower media allows contracting parties to be certain of the operative law, but eliminates the advantages that prompted the use of telefacsimile and electronic mail systems.

Many business users are less cautious, however, so courts will increasingly encounter contracts recorded through these new media without reference to a traditional document.[15] Pessimistic observers worry that the standards developed by courts will undercut the efficiency of the technologies they embrace;[16] of course, these standards

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11. *See, e.g.*, BANKS, *supra* note 8, at 16; Michael M. Sherry, *How to Find the Fax That Fits the Firm — A Modern Necessity*, NATL. L.J., Jan. 30, 1989, at 19 ("The [telefacsimile] machine is quickly becoming a requirement in the modern office.").

12. An attorney recently noted that:

> The full power of the fax hit me when I was putting together a deal in Germany a few months ago. Three of the parties were in Bonn, the other in Las Vegas.
>
> We sent the German proposal to the American by fax. Five minutes later he returned the same document to us with some suggested changes in the wording. The Germans agreed, put their initials on the changes, and faxed back the American's fax. The Nevada party signed on the dotted line and returned the finalized contract. The whole process took only 20 minutes.

Larry Johnson, *The Joy of Fax*, A.B.A. J., July 1989, at 102, 102.

13. *See* Halina S. Dziewit et al., *The Quest for the Paperless Office Electronic Contracting: State of the Art Possibility but Legal Impossibility?*, 5 SANTA CLARA COMPUTER & HIGH TECH. L.J. 75, 76-77 (1989) (noting, inter alia, that Levi-Strauss retailers have cut the amount of time needed to order supplies from one month to two weeks through the use of electronic mail systems).

14. *See Troublesome Legal Issues Threaten Industry Progress*, NETWORK WORLD, June 13, 1988, at 34; John Burgess, *Those Fax-tastic Machines are Revolutionizing Office Communications*, L.A. TIMES, July 12, 1988, at D12 ("One brake on [telefacsimile] growth is that the legal validity of the copies remains in question. . . . If there is ever a question, many companies will follow up a [telefacsimile] with an original by messenger or mail.").

15. Courts have considered commercial documents transmitted by telefacsimile machines on only a few occasions. *See infra* notes 79-85, 170-71 and accompanying text. However, no published opinion has yet contemplated a contract formed through electronic mail.

16. *See* Michael Baum, *Signed, Sealed, and . . . Delivered?*, NETWORK WORLD, June 27, 1988, at 53.

might also provide users with insufficient protection against fraud or transmission errors. Courts are not without guidance in this task, however, for they have struck balances between the concerns of efficiency and accuracy since the early days of the telegraph and teletype.[17] These decisions provide an appropriate framework for analyzing the use of modern communications technologies in a commercial setting, but should not control the analysis alone. Although the media considered herein — telegraph, teletype, telefacsimile, and electronic mail — are steps along an increasingly sophisticated spectrum of communications systems,[18] thereby providing courts and scholars with ready analogies,[19] the distinctive features of each technology vitiate such comparisons. The more advanced systems often fit into the existing legal landscape less readily than did their simpler predecessors. A meaningful analysis of the legal issues must pay careful attention to the specific characteristics of each of these technologies.

This Note analyzes contemporary business practices and specific characteristics of the new media, and suggests a judicial response consonant with courts' approaches to the earlier technologies of telegraphy and teletype. Part I examines the effect of the Statute of Frauds and rules of authentication upon contracts formed using these media. It concludes that documents produced by telefacsimile and electronic mail systems should be considered ordinary writings. Part II considers the Best Evidence Rule and argues that telefacsimiles and electronic mail transmissions should be considered the best evidence of the contract they memorialize. Part III evaluates doctrines of liability allocation in the event of a transmission error while employing these media. It concludes that these doctrines are based upon theories of agency, common carriage, and contract law, rather than characteristics of individual media, and that telefacsimile and electronic mail systems do not require reconsideration of these doctrines. This Note concludes that telefacsimile and electronic mail services, like earlier systems of telegraphy and teletype, should be recognized as legally acceptable media for contract formation.

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17. *See infra* notes 43-47, 55-57, 67-71, 152-58, 188-220 and accompanying text.

18. *See Report and Model Trading Agreement, supra* note 9, at 1686; Brad Schultz, *Electronic Mail*, U.S. BANKER, Feb. 1989, at 53; Henry Geller & Stuart Brotman, *Electronic Alternatives to Postal Service, in* COMMUNICATIONS FOR TOMORROW: POLICY PERSPECTIVES FOR THE 1980S, at 308, 320 (Glen O. Robinson ed., 1978).

19. *See, e.g.*, People v. Hagan, 556 N.E.2d 1224 (Ill. App. Ct. 1990), *aff'd.*, 1991 WL 242340 (Ill. 1991) (comparing telefacsimiles and telegrams); Beatty v. First Exploration Fund 1987 & Co., 25 B.C.L.R.2d 377 (1988) (comparing telefacsimiles and photocopies).

I. DEVICES FOR PROMOTING FRAUD? COMMUNICATIONS TECHNOLOGIES, AUTHENTICATION AND THE STATUTE OF FRAUDS

Two legal rules, the Statute of Frauds and the evidentiary requirement of authentication, have hindered the use of telefacsimile and electronic mail systems in commercial transactions.[20] First, the Statute of Frauds requires certain contracts to be written and signed if they are to be legally binding.[21] Unfortunately, these new technologies cannot transmit handwritten signatures, and the application of the term "writing" to telefacsimiled documents and intangible electronic messages is subject to debate. Second, the requirement of authentication, a condition precedent for the admissibility of evidence, "is satisfied by evidence sufficient to support a finding that the matter in question is what its proponent claims."[22] Parties can authenticate ordinary handwritten or typed documents by demonstrating that a claimed connection exists between an individual and the writing.[23] A stricter standard of authentication might be warranted for newer technologies, however, if these media are unreliable or particularly prone to fraud.

Since litigants must meet both the authentication and Statute of Frauds requirements to prove the existence of certain contracts, and each requirement limits the perpetration of fraud or occurrence of mistake,[24] this Part analyzes their impact upon new communications technologies together. Section I.A examines judicial responses to claims that contracts memorialized through telegrams or teletype failed to satisfy the Statute of Frauds. The section then considers how courts applied the evidentiary requirement of authentication to such documents. Section I.B applies the principles expressed in these cases to the commercial use of telefacsimile and electronic mail systems. This Part argues that neither the Statute of Frauds nor the requirement of authentication should bar the admission of telefacsimiles or

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20. *See* BANKS, *supra* note 8, at 16; Jeffrey Rothfeder, *The Scoop on Snooping: It's a Cinch*, BUS. WK., Sept. 4, 1989, at 82 ("My [telefacsimiled] signature . . . isn't legally binding."); Robert J. Bruss, *Real Estate Q&A*, L.A. TIMES, Apr. 22, 1990, at K6 ("Faxed Counteroffer May Not Be Binding.").

21. U.C.C. § 2-201(1) (1990) provides:

> [A] contract for the sale of goods for the price of $500 or more is not enforceable by way of action or defense unless there is some writing sufficient to indicate that a contract for sale has been made between the parties and signed by the party against whom enforcement is sought or by his authorized agent or broker.

The Statute of Frauds also applies to other sorts of contracts, such as those not to be performed within one year and those conveying on interest in land. Act for Prevention of Frauds and Perjury, 1677, 29 Car. 2, ch. 3, § 4 (Eng.).

22. FED. R. EVID. 901(a).

23. MCCORMICK ON EVIDENCE § 218 (Edward W. Cleary et al., eds., 3d ed. 1984) [hereinafter MCCORMICK].

24. *See* 2 ARTHUR L. CORBIN, CORBIN ON CONTRACTS § 275 (1950) (Statute of Frauds); MCCORMICK, *supra* note 23, § 218 (authentication).

electronic mail messages as evidence of contracts memorialized through these media.

A. *Telegraph and Teletype Systems*

1. *The Writing Requirement of the Statute of Frauds*

The Statute of Frauds has ancient roots. Its framers, the English Parliament of 1677, believed that the rise of the action of assumpsit, which could result in judicial enforcement of oral contracts, had increased the opportunity for fraud through perjured testimony. By mandating that "some note or memorandum in writing . . . signed by the parties to be charged" exist for "contract[s] for the sale of any goods, wares and merchandi[s]es, for the price of ten pounds sterling or upwards . . . to be good,"[25] Parliament hoped to prevent imposing contractual obligations on unconsenting or unwary individuals.[26] Subsequent codifications of the law of commercial transactions substantially retained the Statute. The Uniform Sales Act demands a "note or memorandum in writing" as evidence of certain contracts,[27] while the Uniform Commercial Code requires merely a "writing."[28]

Despite considerable judicial experience in construing the simply worded Statute of Frauds,[29] the absence of a definition for the term "writing" within the Statute of Frauds creates uncertainty when applied to documents memorialized on unusual media. The drafters of the original English statute probably used the term to mean the notes made by merchants in the ordinary course of business.[30] But changing technologies and unusual circumstances have resulted in the submission of other sorts of documents before courts. These cases often in-

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25. 29 Car. 2, ch. 3, § 17 (1677) (Eng.). The English Parliament has repealed § 17 of the Statute of Frauds. *See* CORBIN, *supra* note 24, § 275 (Supp. 1991).

26. *See* CORBIN, *supra* note 24, § 275 ("The purpose of [the Statute] was to prevent the foisting of an obligation of specified classes by perjury upon one who had never assented to assume it.").

27. The Uniform Sales Act provides:

> A contract to sell or a sale of any goods or choses in action of the value of five hundred dollars or upwards shall not be enforceable by action unless the buyer shall accept part of the goods or choses in action so contracted to be sold or sold, and actually receive the same, or give something in earnest to bind the contract, or in part payment, or unless some note or memorandum in writing of the contract or sale be signed by the party to be charged or his agent in that behalf.

UNIF. SALES ACT § 4, 1 U.L.A. 17 (1922).

28. U.C.C. § 2-201(1) (1990). Although this discussion is limited to the Statute of Frauds, the U.C.C. also has a writing requirement in other sections, *e.g.*, §§ 2A-201(1)(b) (lease contracts), 7-202(2) (warehouse receipts), 9-203(1)(a) (security arrangements). The U.C.C. is the first version of the Statute of Frauds to define "writing." Section 1-201(46) provides that the term writing "includes printing, typewriting, or any other intentional reduction to tangible form." U.C.C. § 1-201(46) (1990).

29. The Statute of Frauds has been "interpreted and applied by the courts in tens of thousands of cases." CORBIN, *supra* note 24, § 275.

30. *See* E. Rabel, *The Statute of Frauds and Comparative Legal History*, 63 LAW Q. REV. 174, 182-83 (1947).

volve wills, which are also governed by the writing requirement of the Statute of Frauds.[31] Parties have proffered an assortment of unlikely substitutes for paper and ink, such as an eggshell,[32] corn bin,[33] bedpost,[34] sailor's identification disk,[35] tractor fender,[36] and other sundry objects[37] as wills for probate. In these cases, courts have read the Statute liberally, and considered these unusual submissions within the writing requirement.[38]

Another early decision considering a more common means of communication, the lead pencil, further demonstrates courts' broad reading of the Statute. In *Clason v. Bailey,*[39] the court enforced a contract written in pencil under the writing requirement of the Statute of Frauds. It considered the essence of writing to be the expression of ideas by letters rather than the "mode or manner of impressing those letters."[40] The decision acknowledged the development of communications technology, reviewing means of writing such as iron pen on stone, metal, and waxed tablets, and finally ink on paper. The court added that the acceptable means of writing have "been left to be governed by public convenience and usage; and as far as questions have arisen on this subject, the Courts have, with great latitude and liberality, left the parties to their own discretion."[41] A reference to a requirement of "durability and safety" of the completed writings tempered this dictum.[42]

Consistent with these earlier readings of the Statute of Frauds, courts rapidly accepted telegraphed messages as a valid means of memorializing a contract. One such court, rejecting arguments that telegrams were not writings, found

> it makes no difference whether . . . [the telegraph] operator writes the offer or the acceptance in the presence of his principal and by his express direction, with a steel pen an inch long attached to an ordinary pen-

31. 29 Car. 2, ch. 3, § 5 (1677) (Eng.).

32. *In re* Goods of Barnes, 136 L.T.R. 380 (1927).

33. Sidney T. Miller, *Notes on Some Interesting Wills,* 12 MICH. L. REV. 467, 468 (1914).

34. *Id.*

35. *A Microscopic Will,* 66 SOLIC. J. 638 (1922).

36. W.M. Elliott, Case and Comment, 26 CANADIAN B. REV. 1242 (1948).

37. *See* VIRGIL M. HARRIS, ANCIENT, CURIOUS, AND FAMOUS WILLS 167-69 (1912) (discussing wills prepared on a door, a card torn from a freight train, a collar box, and wrapping paper).

38. *See* Houston P. Lowry, *Does Computer Stored Data Constitute a Writing for the Purposes of the Statute of Frauds and the Statute of Wills?,* 9 RUTGERS COMPUTER & TECH. L.J. 93, 94-95 (1982).

39. 14 Johns. 484 (N.Y. 1817).

40. 14 Johns. at 491.

41. 14 Johns. at 491.

42. The common law has gone so far to regulate writings, as to make it necessary that a deed should be written on paper or parchment, and not on wood or stone. This was for the sake of durability and safety; and this is all the regulation that the law has prescribed. 14 Johns. at 491.

> holder, or whether his pen be a copper wire a thousand miles long. In either case the thought is communicated to the paper by the use of the finger resting upon the pen; nor does it make any difference that in one case common record ink is used, while in the other case a more subtle fluid, known as electricity, performs the same office.[43]

Courts usually paid little attention to the reliability of telegraphy when considering the fit of telegrams within the Statute of Frauds; those that did favorably compared telegraphy to the postal system.[44] The courts acknowledged that failure to accept telegrams as writings under the Statute of Frauds "would certainly impair the usefulness of modern appliances to modern business, tend to hamper trade, and increase the expense thereof."[45] Little dissent accompanied this rule; indeed, later decisions in this area seldom questioned the categorization of telegrams as writings.[46]

Following these analyses, courts also were willing to enforce contracts made using teletype machines under the writing requirement of the Statute of Frauds. As with telegraphy, courts took "a realistic view of modern business practices" and held that teletyped messages satisfied the writing requirement.[47]

2. *The Signature Requirement of the Statute of Frauds*

In addition to a writing requirement, the Statute of Frauds requires valid contracts to bear the defendant's signature. As with the writing requirement, courts have often considered affixations that are outside the ordinary meaning attached to the term "signature" — a person's name handwritten in ink. Acceptable substitutes include marks;[48] stamped,[49] printed,[50] and typewritten[51] names; and letterheads.[52] Courts found each of these variations to be a "signature," relying upon the parties' intent to employ the handwritten signature

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43. Howley v. Whipple, 48 N.H. 487, 488 (1869).

44. *See, e.g.*, Western Twine Co. v. Wright, 78 N.W. 942, 943 (S.D. 1899) ("As a rule, to which an exception is very rare, all letters and all telegrams with equal certainty reach their destination, and, the reasonable intendments with reference to each being identical, the same legal presumption may well be entertained as to both."). Courts often painted a different picture of telegraphy when considering the prospective liability of telegraph companies for transmission errors. *See infra* Part III.

45. Brewer v. Horst-Lachmund Co., 60 P. 418, 420 (1900).

46. *See, e.g.*, Smith v. Easton, 54 Md. 138, 146-47 (1880).

47. *See, e.g.*, Joseph Denuzio Fruit Co. v. Crane, 79 F. Supp. 117, 128-29 (S.D. Cal. 1948), *vacated*, 89 F. Supp. 962 (S.D. Cal. 1950), *reinstated*, 188 F.2d 569 (9th Cir. 1951), *cert. denied*, 342 U.S. 820 (1951).

48. *See In re* Walker's Estate, 42 P. 815, 816 (Cal. 1895).

49. *See In re* Deep River Natl. Bank, 47 A. 675, 677 (Conn. 1900).

50. *See* Wright v. Seattle Grocery Co., 177 P. 818, 820 (Wash. 1919); Berryman v. Childs, 153 N.W. 486, 487-88 (Neb. 1915).

51. *See* Smith v. Milliken Bros., 93 N.E. 184, 184-85 (N.Y. 1910).

52. *See* Drury v. Young, 58 Md. 546, 553-54 (1882).

substitute as an endorsement.[53]

Consonant with this approach, the law quickly recognized telegraphed "signatures" and approved them within the Statute of Frauds.[54] A recent decision illustrated the rationale of these early cases by considering "[t]he telegram with the typed signature of defendant's name [to have] emanated from the defendant which is responsible for it."[55] In addition to focusing upon the parties' intent, courts also deferred to the routine business use of telegrams as a contracting medium. Courts were similarly quite willing to accept both teletyped "signatures" delivered in teletypewritten form[56] and a teletype terminal's answerback[57] as signatures within the Statute of Frauds.

3. *Authentication*

The law of evidence requires that writings must be "authenticated" to be admitted into evidence.[58] Although the rule is said to "defy precise definition,"[59] authentication requires proof that an article is what the offering party claims it is.[60] A party seeking to authenticate a message may employ direct evidence to link a document with a person.[61] Witnesses, for example, may testify they observed an individual signing a letter or contract.[62] A court may also accept authenticating evidence such as lay or expert testimony regarding the author's handwriting style.[63] Additionally, such parties may employ circumstantial evidence, such as the document's location or accompanying items, to authenticate that writing.[64] Further, under the reply letter doctrine, courts will admit a letter into evidence as a reply if it responds, with-

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53. *See also* General Motors Acceptance Corp. v. Anacone, 197 A.2d 506, 512-13 (Me. 1964) (holding that an agent's facsimile signature qualifies as a "signature" if it is affixed both with intent to endorse and with authority). The U.C.C. drafters subsequently codified this requirement. *See* U.C.C. § 1-201(39) (1991) (providing that " '[s]igned' includes any symbol executed or adopted by a party with present intention to authenticate a writing").

54. *See* Trevor v. Wood, 36 N.Y. 307 (1867); Howley v. Whipple, 48 N.H. 487 (1869).

55. La Mar Hosiery Mills, Inc. v. Credit & Commodity Corp., 216 N.Y.S.2d 186 (1961).

56. *See* Joseph Denuzio Fruit Co. v. Crane, 79 F. Supp. 117 (S.D. Cal. 1948), *vacated,* 89 F. Supp. 962 (S.D. Cal. 1950), *reinstated,* 188 F.2d 569 (9th Cir.), *cert. denied,* 342 U.S. 820 (1951); Klein v. PepsiCo, Inc., 845 F.2d 76 (4th Cir. 1988).

57. *See* Clipper Maritime Ltd. v. Shirlstar Container Transp. Ltd., 1 Lloyd's Rep. 546, 554 (1987); Miller v. Wells Fargo Bank Intl. Corp., 406 F. Supp. 452 (S.D.N.Y. 1975), *affd.,* 540 F.2d 548 (2d Cir. 1976).

58. FED. R. EVID. 901(a) ("The requirement of authentication or identification [is] a condition precedent to admissibility . . . .").

59. MCCORMICK, *supra* note 23, § 218.

60. FED. R. EVID. 901(a).

61. MCCORMICK, *supra* note 23, § 219.

62. EDWARD J. IMWINKELRIED, EVIDENTIARY FOUNDATIONS 37 (2d ed. 1989).

63. *Id.* at 38.

64. MCCORMICK, *supra* note 23, § 222 (When "no direct evidence of authenticity of any type exists or can be found [r]esort must then be had to circumstantial proof.").

out unusual delay, to a previous letter.[65] This doctrine is based upon the judicial assumption that the mails are reliable.[66]

Soon after the introduction of telegraphy, courts faced cases challenging them to develop a concept of authentication suited to the characteristics of the technology. Courts might have demanded elaborate testimony on such matters as the validity and acceptance of the scientific principles which underlie telegraph technology, the reliability of the particular telegraph system involved, or the dependability of the operators who entered messages for transmission. Instead, courts applied the previously established rules of authentication for writings.[67] Because concern for the prevention of fraud and mistake underlie both the Statute of Frauds and the requirement of authentication, this result was consistent with the qualification of telegrams as "writings" within the Statute.[68] If courts considered telegrams as safe and as durable[69] as other writings for purposes of the Statute of Frauds, they could also readily subject telegrams to the standards of authentication developed for writings. Courts also allowed telegrams to be authenticated in two ways not generally apposite to other documents. First, parties could introduce telegraph company authorization forms, on which customers would write the message they wished to send.[70] Additionally, parties could call an employee of the telegraph company as an authenticating witness.[71]

Despite acceptance of telegrams under the Statute of Frauds, a minority of courts disagreed with the notion of telegraphy as a reliable medium worthy of the same evidentiary standards as handwritten documents.[72] The lack of confidentiality of telegrams, accompanied by the increased opportunity for fraud,[73] also concerned courts. Not only were such messages read by the recipient, but employees of the telegraph company also had access to transmitted messages. Occasionally, decisions reflected this caution; for instance, some jurisdictions

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65. *Id.* § 225.

66. INWINKELRIED, *supra* note 62, at 39.

67. 29 AM. JUR. 2D *Evidence* § 883 (1967) ("A telegram, like any other document, is admissible in evidence only where authenticated. There must be some competent proof that it is genuine and that it was written and sent by the person whose name it bears.") (footnotes omitted).

68. *See supra* text accompanying notes 43-47.

69. *See supra* text accompanying note 42.

70. *See, e.g.*, Ford v. United States, 10 F.2d 339, 350 (9th Cir.), *aff'd.*, 273 U.S. 593 (1926).

71. *See, e.g.*, Hall v. Western Union Tel. Co., 162 F. 657 (7th Cir. 1908); Peterman v. Vermont Sav. Bank, 159 So. 598 (La. 1935).

72. MCCORMICK, *supra* note 23, § 225

73. *Id.* One commentator noted:

> [While] it is unnecessary to disclose the intelligence contained in a letter to any one to effect its transportation by mail, it is absolutely necessary to disclose intelligence to at least two operators to effect its transmission by telegraph. Consequently, the telegraph offers far greater opportunity to deliver fraudulent answers to inquiries than the mail does.

MORRIS GRAY, A TREATISE ON COMMUNICATION BY TELEGRAPH § 135 (1885).

refused to authenticate reply telegrams as they would reply letters.[74] Such telegrams had to be authenticated like ordinary telegrams. Later decisions, responding to the increasing reliability and acceptance of this medium, rejected this exception to the reply letter doctrine.[75] Courts also broadly accepted teletyped messages as writings and held them to the same standards of authentication as more traditional writings.[76]

Contemporary judicial attitudes toward contracts memorialized through telegraph or teletype are thus straightforward with regard to the Statute of Frauds and authentication requirements. Courts consider such contracts as writings within the Statute of Frauds, and will also accept typed names as substitutes for handwritten signatures. Additionally, some decisions regard teletype terminals' answerbacks as signatures. Parties may also authenticate both sorts of messages as readily as more traditional writings, without regard to a detailed showing of the technical underpinnings or reliability of the media.

B. *Novel Communications Media, the Statute of Frauds and Authentication*

1. *Telefacsimile Machines*

For both the Statute of Frauds and the authentication requirements, the threshold question is whether courts will adopt telefacsimiles as writings. If so, the writing portion of the Statute would be satisfied, and adoption of the standard of authentication that exists for other writings would follow.[77] The policy of deference to commercial use displayed in the telegraph and teletype cases may lead contemporary judges to accept telefacsimiles as writings also. The nearly universal presence and extensive use of telefacsimile machines in modern offices supports finding telefacsimiled messages to be "writings." The Uniform Commercial Code also supports acceptance: a telefacsimile should logically be considered an "intentional reduction to tangible form."[78] Further, a court will likely imply assent to one who telefacsimiles a document bearing his signature to a commercial partner.

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74. *See* Drexel v. True, 74 F. 12 (8th Cir. 1896); Smith v. Easton, 54 Md. 138, 146 (1880); Howley v. Whipple, 48 N.H. 487, 488 (1869); Chester v State, 5 S.W. 125 (Texas Crim. App. 1887).

75. *See* McCORMICK, *supra* note 23, § 225 ("The contrary view, that the inference of authenticity of the reply telegram is substantial and sufficient, seems more reasonable and expedient.") (citations omitted).

76. *See, e.g.*, Guynn v. Corpus Christi Bank & Trust, 589 S.W.2d 764 (Tex. 1979). *But see* Joseph J. van Dort, *Bank Guarantee by Telex*, 14 INTL. BUS. LAW. 173 (June 1986), describing a Dutch case where a bank allegedly issued a guarantee by teletype. The court accepted expert testimony regarding the ease of altering the indicated source of the message when the parties fail to employ special security measures. The court thus ruled that the bank was not responsible for the teletyped guarantee.

77. *See supra* text accompanying notes 68-69.

78. U.C.C. § 1-201 (1990) (defining "writing").

The few courts considering the application of the Statute of Frauds and authentication to telefacsimiles have reached this result.[79] These decisions are notable for their brevity as well as their outcome. In *Beatty v. First Exploration Fund 1987 & Co.*,[80] the court simply equated telefacsimiles to photocopies, and found no greater uncertainty or opportunity for fraud through the use of telefacsimiles than for original documents. The court wrote that technological improvements in communication "should be considered, and, unless there are compelling reasons for rejection, they should be encouraged, applied, and approved."[81] In *People v. Hagan*,[82] the court faced a choice between the standard for telegrams or the standard for computer records as the appropriate authentication standard of telefacsimiled documents. In most jurisdictions, telegrams are authenticated like any other writing.[83] Computer records, however, require proof that the "generating system was standard, unmodified, and properly operated."[84] Although the *Hagan* court did not select a standard, it did consider a telefacsimile "more trustworthy than the telegram since it does not rely on a transcribing of the document at the receiving end."[85] This conclusion supports applying the lower standard of writings for telefacsimiles, rather than the standard of computer records.

The *Beatty* and *Hagan* courts analyzed telefacsimiles by measuring them against earlier media for which well-established legal norms exist. Both concluded that the reliability of the new technology rivals that of telegraphy and photocopying, and that telefacsimiles therefore similarly warrant approval under the Statute of Frauds and the standards of authentication for ordinary writings. Such comparisons must carefully consider the specific characteristics of the contrasted media, however. The level of trust commercial users place in a technology, often referred to in earlier telegraph and teletype cases but not considered in *Beatty* or *Hagan*, offers another measure of dependability. The overwhelming business acceptance of devices such as telefacsimile machines strongly evidences their trustworthiness. Commercial acceptance does not end the inquiry, however, for legal standards may dictate, in addition to being dictated by, business practices. Courts

79. *See, e.g.*, Hessenthaler v. Farzin, 564 A.2d 990 (Pa. Super. 1989); Bazak Intl. Corp. v. Mast Indus., 535 N.E.2d 633 (N.Y. 1989).

80. 25 B.C.L.R.2d 377 (1988). This decision actually concerns the validity of telefacsimiled proxies under a limited partnership agreement requiring proxies to be signed and in writing. Because these requirements are identical to those imposed by the Statute of Frauds, an analysis of this decision is relevant.

81. 25 B.C.L.R.2d at 385.

82. 556 N.E.2d 1224 (Ill. App. Ct. 1990), *affd.*, 1991 WL 242340 (Ill. 1991). The case concerned falsified banking records which had been transmitted by a telefacsimile machine. The court upheld the defendant's conviction on one court of forgery.

83. 29 AM. JUR. 2D *Evidence* § 883 (1967)

84. 556 N.E.2d at 1239.

85. 556 N.E.2d at 1239.

should exercise caution when approving new technologies, and fully examine their unique characteristics when considering the possibility of mistake, fraud, and perjury.

a. *Difficulties with telefacsimile machines.* Telefacsimile machines possess unique characteristics that may increase the opportunity for mistake or fraud as compared with ordinary writings. These factors are not, however, sufficiently distressing to warrant the removal of telefacsimiles from the scope of the term "writing." The first distinguishing feature, the tendency for telefacsimiled documents to deteriorate, departs significantly from ordinary paper, and works against the requirement that a writing must be both durable and safe to be within the Statute of Frauds.[86] Current telefacsimile technology prints the recipient's document through the oxidation of chemically treated, thermally activated paper.[87] This treatment renders the resulting document susceptible to darkening. Some observers indicate that telefacsimiles will deteriorate in less than a week when exposed to bright light, and even those safely stored can become unreadable in two years or less.[88]

In addition to generating fragile documents, telefacsimile machines sometimes skip lines, paragraphs, or even entire pages during the transmission process.[89] A court recently faced this problem in *American Multimedia Inc. v. Dalton Packaging,*[90] where a supplier failed to receive a page of a telefacsimiled purchase order. The missing page contained an arbitration clause, which became relevant when the purchaser received allegedly defective goods. Since the disputing parties had previously made use of the same purchase order form, and the portion of the document received referred to the missing page, the court held the supplier had notice of the arbitration clause. The resolution of this issue becomes more difficult when a course of dealing rationale does not apply.

A third troubling characteristic of telefacsimile technology is the heightened opportunity for individuals to commit fraud by altering documents. The use of original documents, rather than telefacsimiles, provides greater assurance that the document is accurate and unmodified. For this reason, the banking industry in particular has become increasingly wary of accepting payment orders via telefacsimile.[91]

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86. *See supra* text accompanying note 42.

87. *See supra* note 8.

88. *See* Belden Menkus, *Bits and Pieces: Overview of Telecommunications News*, 35 MODERN OFF. TECH., Jan. 1990, at 150; *see also* David B. Pearson & Douglas P. Sauter, *Assessing the Risks of Fax Confirmations*, J. ACCT., Mar. 1990, at 75, 78.

89. *See* Benjamin Wright, *Fax Pacts: Contracting via Fax Machines Could Leave the User on Shaky Legal Ground*, NETWORK WORLD, Feb. 5, 1990, at 69.

90. 540 N.Y.S.2d 410 (1989).

91. *See Beware! Fax Attacks!*, A.B.A. BANKING J., June 1990, at 52, 53.

Anecdotes describe thieves cutting signatures from company communications, attaching them to payment orders, and sending the order to the bank.[92] The quality of telefacsimiled documents makes these frauds difficult to detect, even if accepted sciences such as signature analysis are employed.[93] Current telefacsimile technology is also susceptible to page-swapping[94] and alteration of the indicated source of the telefacsimile.[95]

b. *Responses to these concerns.* Although the propensity of telefacsimiles toward darkening, skipped lines or pages, and undetected alteration is worrisome, these characteristics should not render telefacsimiled contracts invalid under the Statute of Frauds, or increase the required standard of authentication beyond that of ordinary writings. First, darkened documents are often difficult to read, but they do not noticeably increase the opportunity for fraud, perjury, or mistake, the chief concern of these standards. Courts have accepted far more fragile media in the past.[96] Furthermore, courts have held that even writings which are lost or destroyed satisfy the Statute of Frauds.[97] Telefacsimiles rendered unreadable through aging or exposure to light fit easily within this category. The self-interest of parties who have selected the telefacsimile as a contracting medium and are aware of its limitations provides an additional safeguard. These parties are capable of recording important telefacsimiled documents on a more stable medium, by photocopying or other techniques.[98]

Skipped pages or other telefacsimile errors are also not so pervasive as to disqualify telefacsimiled documents as writings for the purposes of the Statute of Frauds or authentication. Mistakes occur in other means of communication as well. Mailed documents get damaged or fail to arrive, telegrams become garbled in transmission, and it is sometimes difficult to hold a conversation over the telephone. Nonetheless, contracting parties continue to rely heavily on these media, for such events are recognized as exceptions to what are generally reliable means of communication. Courts have acknowledged this acceptance as a compelling reason for recognition of a given technology under the Statute of Frauds. A similar awareness of the tremendous

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92. *Id.*; *see also* Benjamin Wright, *A Signature Is a Signature,* NETWORK WORLD, Feb. 5, 1990, at 70.

93. *See* Patricia Bordman, Note, *Telefacsimile Documents: A Survey of Uses in the Legal Setting*, 36 WAYNE L. REV. 1361, 1364-65 (1990); Dziewit et al., *supra* note 13, at 86.

94. *See* Wright, *supra* note 89, at 69 ("A dishonest [telefacsimile] recipient could fabricate a page and substitute it for one of the genuine pages.").

95. *See Beware! Fax Attacks!*, *supra* note 91, at 52.

96. *See supra* notes 32-38 and accompanying text.

97. *See* RESTATEMENT (SECOND) OF CONTRACTS § 137 (1979) ("The loss or destruction of a memorandum does not deprive it of effect under the Statute.").

98. *See, e.g.*, BANKS, *supra* note 8, at 50.

business acceptance of the telefacsimile, rather than a casual comparison with telegraphy or photocopiers, should guide courts in setting standards of authentication.[99]

The final distinguishing feature of telefacsimiles, their susceptibility to undetected alteration, presents a question of approach with respect to the Statute of Frauds. Some courts and commentators have considered the problem of fraudulent document changes not as a Statute of Frauds issue, but as one of contract formation.[100] This conclusion sidesteps the principle role of the Statute of Frauds, the preservation of the terms of a contract. If the submitted memorandum presents a significant likelihood of fraud, the Statute of Frauds cannot truly be satisfied. The better analysis looks first to the primary thrust of the Statute: "whether the contract was made as alleged and whether there is any substantial danger that it is being established by perjury and fraud."[101] A Statute of Frauds defense to telefacsimiled contracts, however, should not necessarily be recognized under this approach. Other sorts of duplicative techniques present greater difficulties. Carbon copies, for example, fail to reflect changes in the original document once detached, but have long been accepted as memoranda within the Statute of Frauds.[102]

Concern for the possibility of fraudulent alteration also motivates the authentication requirement for writings. Only if telefacsimiles present a sufficiently greater opportunity for fraud than other documents, such as telegrams or handwritten letters, is a stricter standard of authentication justified. Although telefacsimiles present possibilities for alteration which were not feasible with earlier technologies, these opportunities do not justify imposing a stricter standard of authentication. Indeed, no special authentication standards have been promulgated for carbon copies,[103] which offer greater opportunities for fraud than telefacsimiles. Further, many telefacsimile machines have the ability to generate transaction reports, which provide a record of the documents sent and received, the date and time of the transmissions, the length of the telefacsimiled documents, and the phone number of the other party.[104] These reports provide an additional de-

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99. Of course, once a transmission error has occurred, interest arises in which party should bear a consequential loss. *See infra* Part III for a discussion of the potential liability of the telefacsimile manufacturer in such circumstances.

100. *See, e.g.*, Rork v. Las Olas Co., 23 So. 2d 839 (Fla. 1945); *Report and Model Trading Agreement, supra* note 9, at 1683-84.

101. CORBIN, *supra* note 24, § 522.

102. *See* Panko v. Alessi, 524 A.2d 930, 931 (Pa. Super. Ct. 1987).

103. *See, e.g.*, Young v. Sorenson, 121 Cal. Rptr. 236 (Ct. App. 1975); Ma-Jet-Ic Furnace Corp. v. Great S. Trucking Co., 93 S.E.2d 589 (Ga. Ct. App. 1956); Furrer v. State Indus. Accident Commn. of Or., 353 P.2d 565 (Or. 1960). Note that carbon copies, like telegraph, teletype, telefacsimile, and electronic mail transmissions, often raise Best Evidence Rule issues. *See infra* Part II.

104. *See* BANKS, *supra* note 8, at 56-57.

gree of protection against fraud during commercial telefacsimile use.[105]

The increasing reliability of newer telefacsimile machines should lessen the opportunity for fraud and mistake. For instance, the recent introduction of telefacsimile machines which employ ordinary, rather than thermally activated, paper has lessened worries of sudden deterioration of important telefacsimiled documents.[106] Innovations such as these are often expensive, however. Even as prices drop, older forms of the technology frequently find their way into new markets.[107] The rapid spread of refinements should not be relied upon to resolve problematic aspects of new technologies. Courts will continue to encounter, and must be sure to recognize, these unique traits of telefacsimile communication for years to come.

2. *Electronic Mail*

As with telefacsimiles, the threshold question is whether contracts memorialized through electronic mail constitute legal "writings." No court has yet considered this issue.[108] Courts' broad interpretation of "writing" in other contexts strongly indicates that electronic mail should fare equally well under the Statute of Frauds. The novel characteristics of this medium, however, require an even broader interpretation of the Statute than for any established technology. For example, transactions conducted through electronic mail do not necessarily involve a "tangible form" as the Uniform Commercial Code requires.[109] Unlike telegraph, teletype, and telefacsimile technologies, the transmitted data may remain in electronic form, or be stored on magnetic media rather than paper. The signature requirement may also prove troubling. Either a mere indication of the message's source may be deemed to constitute a "signature," or some other aspect of the technology must suffice.

Despite the unique features of electronic mail, the writing requirement of the Statute of Frauds should be less of a concern for contracts memorialized through this media than it may initially appear. Although electronic mail transmissions do not necessarily involve writings, users may employ these computer systems to generate a pa-

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105. *See* Zink Communications v. Elliott, 1990 U.S. Dist. LEXIS 14784, at 30-32, 38 (judicial treatment of telefacsimile machine's transaction report); Liberty Mut. Fire Ins. Co. v. Ybarra, 751 S.W.2d 615, 618 (Texas Ct. App. 1988) (same).

106. *See How to Buy a Fax Machine*, 1 HOME & OFFICE FAX BUYER'S GUIDE 11, 13 (1990); *see also* Tracey Tucker, *Did You Get My Fax: Proof of Content and Delivery Raises Questions of Security and Legality*, 8 TELECONNECT, no. 7 at 38 (July 1990).

107. *See* Don Dailey, *The Fax Boom of the '90s*, 1 HOME & OFFICE FAX BUYER'S GUIDE 5, 8 (1990) (reporting prediction of a $300 telefacsimile machine designed for home use by 1993).

108. *See* WRIGHT, *supra* note 7, § 16.4.4.

109. U.C.C. § 1-201(46) (1990).

per record at any point in the process.[110] Electronic mail systems are more flexible than the other communications systems considered here, in that paper may be generated, but more efficient storage mechanisms may be used as well.[111] Most of the paper produced by these systems will likely be generated at some time following the start of the contract, such as when a conflict has arisen. This characteristic is not necessarily a fatal flaw under the Statute of Frauds, however; dilatory memorialization of contracts has not voided such documents in the past.[112]

The signature requirement of the Statute of Frauds is not resolved so readily. In the normal course of events an electronic message cannot be accompanied by a handwritten signature. But several possible replacements for a normal signature seem appropriate, including a confirmation technology resembling a teletype terminal's answerback feature,[113] the user's use of a network access code,[114] perhaps in combination with the input of a "send" or "post" command which results in message transmission,[115] or simply the inclusion of the sender's typewritten name at the close of the message.

Of these options, the last is most desirable. The acceptance of answerbacks as signature substitutes for teletyped documents is more troubling than judicial approval of telegraphed names as signatures. Every teletype communication includes an exchange of answerbacks, not merely those where an individual intends to validate a contract.[116] Similarly, user access codes and system commands merely provide users with the capability to send and to receive messages. The intent to be bound by the terms of the contract, readily inferred from the signing of a document, should not be so implied from using the necessary elements of a technology.[117] In contrast, a judicial determination that a voluntarily typed name accompanying an electronic mail

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110. Of course, the integrity of the system's storage, retrieval and printing mechanisms becomes increasingly important here as well. *See infra* notes 121-24 and accompanying text.

111. *See Report and Model Trading Agreement, supra* note 9, at 1686.

112. *See* Crabtree v. Elizabeth Arden Sales Corp., 110 N.E.2d 551, 553 (N.Y. 1952) (Payroll cards, prepared months after an employment contract was entered into, "unquestionably constitute . . . memorand[a] under the [S]tatute.").

113. Internet, a national electronic mail network, has proffered draft standards for authentication of messages based on public key encryption. "Developers of the technology say the encryption will provide users with 'digital envelopes' that cannot be opened except by the addressee, and the contents will have 'digital signatures' that cannot be forged." Vin McLellan, *Data Network to Use Code to Insure Privacy*, N.Y. TIMES, late city ed., Mar. 21, 1989, at D5.

114. A password may be substituted for the access code. *See Report and Model Trading Agreement, supra* note 9, at 1687.

115. *See* ELECTRONIC MESSAGING, *supra* note 2, at 16.

116. In Clipper Maritime Ltd. v. Shirlstar Container Transp. Ltd., 1 Lloyd's Rep. 546, 554 (1987), the court distinguished between the answerback of the sender and that of the receiver. The latter would not be considered a signature since it "only authenticates the document and does not convey approval of the contents."

117. *See Report and Model Trading Agreement, supra* note 9, at 1680 n.148.

message constitutes a signature comports with case law approving signature variants that indicate acceptance of a contract.[118]

The courts' unwillingness to upset settled business practice through rulings on the technical requirements of the law of evidence lends additional support to the conclusion that contracts made and recorded on electronic mail systems should survive scrutiny under the Statute of Frauds. The use of electronic mail in a commercial context is widespread,[119] and some observers have predicted a staggering increase of use within the next five years.[120] This trend should bolster legal findings that electronic mail is a legally valid commercial medium.

In contrast, commercial acceptance does not necessarily justify inclusion of electronic mail messages within the ordinary authentication standards for writings. Since such messages are ordinarily stored in the memory unit of general purpose computer systems,[121] their introduction into evidence raises questions both of origin and manner of storage. As such, electronic mail messages should be subject to both the same authentication standards as any computer record, and the requirement of showing a connection of a person with the message. The former standard is more burdensome: as with early telegraph systems, the susceptibility of computer systems to mistake or fraud concerns many observers.[122] Authentication of a computer record consists of a showing of the "process or system used to produce a result and showing that the process or system produces an accurate result."[123] Such a standard requires a showing of the reliability of the equipment and programs used, the method of entering and storing the data in the system, and the measures taken to assure the accuracy of the system.[124]

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118. *See supra* notes 48-53 and accompanying text. Because courts have considered testimony beyond the face of a writing to determine whether a writing is "signed," *see* CORBIN, *supra* note 24, § 522; electronic mail message headings, which indicate a message's source and time of delivery, *see* BANKS, *supra* note 8, at 133-35, may prove useful in cases concerning the Statute of Frauds.

119. *See, e.g.*, Leila Davis, *Retailers Go Shopping for EDI*, DATAMATION, Mar. 1, 1989, at 53.

120. *See* Averil Reisman, *EDI Clearing New Paths for Distribution*, COMPUTER & SOFTWARE NEWS, May 23, 1988, at 61.

121. *See* BANKS, *supra* note 8, at 175.

122. One analyst noted that "[a] skilled programmer who understands a given computer system and has direct access to the system can alter the data stored within the system, leaving no trace of the alteration." James A. Sprowl, *Evaluating the Credibility of Computer-Generated Evidence*, 52 CHI.-KENT L. REV. 547, 560 (1976).

123. FED. R. EVID. 901(b)(9).

124. *See* William A. Fenwick & Gordon K. Davidson, *Use of Computerized Business Records as Evidence*, 19 JURIMETRICS J., Fall 1978, at 9, 19. Because the Federal Rules of Evidence already contemplate computer records, this Note considers only electronic mail transmission systems, rather than the underlying computer systems used to generate and store electronic mail messages. However, as electronic mail systems become increasingly common in small offices, parties wishing to introduce such evidence may find these authentication standards extremely

No court has yet considered what constitutes competent evidence that an individual sent an electronic offer or acceptance.[125] This standard of authentication should depend upon the reliability of electronic mail systems. The more confidence placed in a medium, the more deference the medium should receive for authentication and other evidentiary issues. As with other media employing electricity, errors in electronic mail messages may result from low quality transmission lines, radio interference, electrical storms, power supplies, various properties of switching and signaling equipment, and numerous other sources.[126] These concerns are amplified for systems like electronic mail, which transmit encoded characters,[127] rather than the encoded images of telefacsimile machines[128] or converted sound of telephones.[129] The consequences of an unintended alteration of the transmitted electrical signal may result in altered characters, rather than miscolored dots and completely incomprehensible images on a telefacsimile, or mere background noise and garbled voices over a telephone.

To negate these sources of error and increase the accuracy of transmitted data in electronic mail systems, designers have developed error-correcting protocols.[130] Such protocols introduce redundancy into the data when it is sent.[131] The transmission of a message multiple times presents a simple redundancy,[132] although more efficient schemes have been developed.[133] Despite these protocols, designers expect undetected errors to occur;[134] a typical error-correcting protocol provides a probability of undetected error on the order of three bits, or digits in the binary number system employed by electronic computer sys-

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onerous. Unlike corporate mainframe computers, the personal computers used in these smaller settings typically employ unaudited software with few security measures. Whether courts should develop authentication standards which are more appropriate for typical personal computer systems is outside the scope of this Note.

125. *See* Dziewit et al., *supra* note 13, at 87.

126. *See* Jack Douglass, *How To Find Phone-line Faults and What To Do About Them*, DATA COMMUNICATIONS, Sept. 1988, at 179.

127. *See* BANKS, *supra* note 8, at 119-24.

128. *See id.* at 36.

129. JOEL EFFRON, DATA COMMUNICATIONS TECHNIQUES AND TECHNOLOGIES 18-27 (1984).

130. MAN YOUNG RHEE, ERROR-CORRECTING CODING THEORY 8-10 (1989).

131. JERRY FITZGERALD, BUSINESS DATA COMMUNICATIONS: BASIC CONCEPTS, SECURITY, AND DESIGN 243 (1984).

132. PIERRE LAFRANCE, FUNDAMENTAL CONCEPTS IN COMMUNICATION 202-03 (1990).

133. *Id.* at 297-370.

134. *Id.* at 297.

tems,[135] in one hundred million.[136] Although this appears to be an extremely strong assurance of data accuracy, modern communication systems transmit a phenomenal number of bits. For example, the newly proposed gigabit network, a national electronic mail network, will operate at speeds of one billion bits per second or more.[137] If systems designers employ the aforementioned error-correcting code, operators of this system could discover as many as thirty transmission errors each second in a "worst-case" scenario. Fortunately, proper use of powerful error-correcting protocols can provide nearly error-free data transmission,[138] and this network need not be nearly so error prone. Service providers may simply dispatch more redundant data with transmitted messages, allowing more accurate operation of an error-correcting protocol, although decreasing the rate by which the network may transmit information.[139]

Considerations of these design trade-offs should weigh heavily during the establishment of a presumption of reliability, and therefore the appropriate standard of authentication, for various electronic mail systems. Thus, courts should consider testimony concerning a system's error-correcting protocols, as well as the method, accuracy, and security of its storage and retrieval mechanisms,[140] to reach a sensible determination of the system's reliability and susceptibility to fraud and error. Ordinary standards of authentication are appropriate only if system designers have implemented protocols which ensure the reliable exchange of information. Such a standard not only prevents fraud, perjury, and mistake, but encourages business users to utilize those

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135. Each binary digit, or bit, has a value of 0 or 1, corresponding to the presence of low or high voltage in the transmitted electrical signal. Computers and electronic mail systems represent alphabetic or numerical characters with a fixed number of bits. System designers usually set this number at eight, and call the 8-bit units "bytes." *See* FRED HALSALL, INTRODUCTION TO DATA COMMUNICATIONS AND COMPUTER NETWORKS 11 (1985). If an undetected transmission error alters the value of one or more bits, the receiving unit will interpret the byte as a different character. For example, a system employing the Extended Binary-Coded Decimal Interchanged Code (EBCDIC) will transmit the number "7" as "11110111." If the right-most bit is changed during transmission to "0," the receiving unit will read "11110110," which is then interpreted as the number "6" under the EBCDIC. *See* BRITT RORABAUGH, DATA COMMUNICATIONS AND LOCAL AREA NETWORKING HANDBOOK 16, 19 (1985).

136. This protocol adds 25 bits to each block of 1000 bits according to the "cyclical redundancy check" detecting scheme. This figure assumes use of an "automatic repeat request" system, which requests data retransmission once it detects an error. FITZGERALD, *supra* note 131, at 249.

137. *See* John Markoff, *Fiber Optics: New Networks for the Nation*, N.Y. TIMES, Jan. 1, 1991, at 39; *Research on Gigabit Networks Jointly Funded by NSF and DARPA*, PR NEWSWIRE, June 8, 1990.

138. *See* EFFRON, *supra* note 129, at 163

139. *See* FITZGERALD, *supra* note 131, at 243.

140. A simple example of one system design feature which courts should consider is the ability of users to modify the text of received messages. While commercial electronic mail systems like AT&T Mail, DASnet, MCI Mail, and TELEMAIL allow users to reread, delete, and forward messages, along with many other services, they prevent users from tampering with received messages. *See* BANKS, *supra* note 8, at 191-204.

electronic mail services with accuracy appropriate for commercial dealings.

Neither the often maligned[141] Statute of Frauds nor the evidentiary requirement of authentication impeded the adoption of telegraphy or teletype as valid means of conducting and memorializing commercial transactions. When considering these media, courts relied primarily on their commercial acceptance, rather than on a more technical evaluation of their reliability or susceptibility to fraud. Under this approach, the widespread acceptance of both telefacsimile and electronic mail technology should readily extinguish a Statute of Frauds defense for contracts conducted through these technologies. However, concerns over increased opportunity for fraud and mistake in new technologies may warrant more difficult standards of authentication for these technologies, particularly for electronic mail networks that employ insufficient error-correcting techniques.

II. THE BEST EVIDENCE RULE

The Best Evidence Rule presents separate evidentiary concerns for users of telefacsimile machines and electronic mail systems.[142] The Rule provides that the offering party must produce an available original to prove the terms of a document.[143] Here too, characteristics of these novel media strain legal conceptions that are ordinarily straightforward. Unlike copying by hand or photocopier, the processes employed by telefacsimile and electronic mail systems make proper identification of an "original document" difficult. Curiously, an analysis of available authority indicates that the rules governing electronic mail, the newest media considered here, are largely settled,[144] while those concerning telefacsimile machines, the earliest of these technologies,[145] remain unsettled. Section II.A of this Part reviews the development of the Best Evidence Rule, including its reach to electronic mail messages. Section II.B argues that telefacsimiles should also be considered as best evidence within the scope of this rule.

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141. *See, e.g.*, Francis M. Burdick, *A Statute for Promoting Fraud*, 16 COLUM. L. REV. 273 (1916).

142. *See, e.g.*, Wright, *supra* note 89, at 69; Dziewit et al., *supra* note 13, at 89-90; Anita Micossi, *Paperless Office: Legal Liability*, 17 COMPUTER & COMMUNICATIONS DECISIONS, July 15, 1985, at 16.

143. MCCORMICK, *supra* note 23, § 230. Rule 1002 of the *Federal Rules of Evidence* provides, "[t]o prove the content of a writing, recording, or photograph, the original writing, recording, or photograph is required, except as otherwise provided in these rules or by Act of Congress." FED. R. EVID. 1002.

144. The Federal Rules of Evidence provide that accurate computer printouts of data such as stored electronic mail messages are original documents for the purposes of the Best Evidence Rule. *See infra* text accompanying notes 164-67.

145. The concept of transmitting fixed images through electrical signals predates even telegraphy. Alexander Bain first conceived of the facsimile machine in 1848. *See* JOHN G. TRUXAL, THE AGE OF ELECTRONIC MESSAGES 482 (1990).

A. *The Development of the Best Evidence Rule*

Scholars have linked the Best Evidence Rule with the ancient pleading doctrine of *profert in curia.*[146] This doctrine essentially required a plaintiff to allege that he could produce a document on which his suit was founded.[147] The rule requiring production of original documents grew gradually out of this doctrine,[148] reaching its apotheosis in 1700 as Chief Justice Holt said "the best proof that the nature of the thing will afford is only required."[149] Most modern commentators give a more narrow reading to the Best Evidence Rule, confining it to a requirement that parties produce available original documents rather than copies.[150] Observers differ on the appropriate rationale for the Best Evidence Rule; possible theories include a desire to prevent fraud, cognizance of the high probability of error when individuals manually transcribe copies, and belief that a substantial risk of error exists when the terms of a writing are disclosed through oral testimony.[151]

The development of telegraphy introduced a new wrinkle into this doctrine. Jurisdictions differed on whether the "original" writing was the message as delivered to the telegraph company for transmission, or the telegram ultimately received.[152] These cases framed the issue as one of contract law rather than evidence.[153] Some courts considered the telegraph company to be the agent of an individual sending a message.[154] As such, the sender was responsible for the telegram's contents even in case of an error.[155] This substantive law dictated that the telegram as received was the original.[156] Other courts deemed employee rather than agency status more appropriate for telegraph companies, and denied the existence of a contract formed on the basis of

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146. 9 WILLIAM HOLDSWORTH, A HISTORY OF ENGLISH LAW 168 (1926).

147. BLACK'S LAW DICTIONARY 1210 (6th ed. 1990).

148. Edward W. Cleary & John W. Strong, *The Best Evidence Rule: An Evaluation in Context*, 51 IOWA L. REV. 825, 825 (1966).

149. Ford v. Hopkins, 1 Salk. 283, 91 Eng.Rep. 250 (K.B. 1700).

150. MCCORMICK, *supra* note 23, § 229. *But see* Dale A. Nance, *The Best Evidence Principle*, 73 IOWA L. REV. 227, 227 (1988).

151. MCCORMICK, *supra* note 23, § 231.

152. 29 AM. JUR. 2D *Evidence* § 474 (1967).

153. *See* MCCORMICK, *supra* note 23, § 235 (When considering whether a document is an original or a copy, "[t]he question to be asked . . . is whether, under the substantive law, the creation, publication, or other use of [the document] may be viewed as affecting the rights of the parties in a way material to the litigation.").

154. *See, e.g.*, Des Arc Oil Mill v. Western Union Tel. Co., 201 S.W. 273, 274 (Ark. 1918); Brooke v. Western Union Tel. Co., 46 S.E. 826, 826 (Ga. 1904); J.L. Price Brokerage Co. v. Chicago, Burlington & Quincy R.R., 199 S.W. 732, 733 (Mo. 1917).

155. *See* Ayer v. Western Union Tel. Co., 10 A. 495, 497 (Me. 1887).

156. *See* Collins v. Western Union Tel. Co., 41 So. 160, 162 (Ala. 1906); Anheuser-Busch Brewing Co. v. Hutmacher, 21 N.E. 626, 628 (Ill. 1889); Magie v. Herman, 52 N.W. 909, 909 (Minn. 1892).